

IEEE P2520.2.1
Machine Olfaction Devices and Systems used for General Outdoor Odor
Monitoring
(SEN/SC/TMODS/OOM/2520.2.1)

Working Group Meeting Minutes
14 November 2022 / 10:00 AM – 11:00 AM (ET)
WG Chair: Ehsan Danesh
WG Secretary: Troy Nagle (substituting)

1. Call to Order

The Chair called the meeting to order at **10:05** AM ET. The Chair also announced that the meeting was being recorded for the purpose of preparing minutes.

2. Roll Call and Disclosure of Affiliation

Affiliation FAQs: <http://standards.ieee.org/faqs/affiliation.html>

The Chair directed participants to a Google Docs link in the Chat window:

https://docs.google.com/spreadsheets/d/1ydvTFKxRSYRpT1CX-22zaNkETV4_aqD2NDVSoxxfk8/edit?usp=sharing

Participants were asked to register for the meeting by placing an X at the intersection between the row including their name and the column including the meeting date. First-time participants and individuals whose information was not already listed within the Google document were instructed to include their name, affiliation and status under the appropriate columns at the bottom of the Google form. The Chair advised participants that member status is contingent upon provision of all required information, any missing information having been highlighted (yellow) in the Google document for participant's convenience. Participants were also asked to include their affiliations in parentheses after their name in the Chat window, if using the chat area. A few minutes were allowed for participants to access and complete the sign-in process. The Chair added the attendance status of participants who did not complete their attendance status directly.

At least two (2) of the most recent four (4) WG meetings must be attended in order to maintain voting rights.

The participant information from the chat window and from the participant registration document has been merged and may be found in **Attachment A**.

3. **Approval of Agenda and Previous Meeting Minutes**

The Chair displayed the announced agenda. Fifteen of the 31 voting members were attending. Since a quorum was not met, the agenda was not officially adopted. Minutes of prior meetings were not approved.

4. **IEEE Patent & Copyright Policies**

a. Call for Patents

<https://development.standards.ieee.org/myproject/Public/mytools/mob/sli/deset.pdf>

Per standard IEEE-SA WG meeting practice, the Chair reviewed the required policy regarding potentially essential patents. No one raised concerns for consideration.

b. Copyright Policy

<https://standards.ieee.org/ipr/copyright-materials.html>

Per standard IEEE-SA WG meeting practice, the Chair reviewed the required policy regarding copyrights. There were no questions or concerns.

5. **Technical Presentation(s) and Discussion**

The Chair introduced the presenter for the November 14th 2022 WG Meeting.

a. ***Presentation by Sandrine Isz***

Sandrine Isz is a representative of Alpha MOS, a company that develops, manufactures, and sells sensory analysis solutions. The presentation covered techniques and methodologies implemented by the electronic nose, Heracles. The market for the system is food, beverage, and packaging. Alpha MOS provides solutions for odor/flavor, taste, visual appearance assessment, and chemical analysis. The three main components of the system are Sampling & injection, Resolution/detection, and Data acquisition & processing. For Sampling, static headspace generation was reviewed including the properties of polar compounds. For Resolution, chromatography was reviewed, including compensation of drift and calibration. For Data acquisition, peak analysis methods were described. Reference sample options were summarized. Four qualitative models are available: Statistical Quality Control, Discrimination Factorial Analysis, Shelf Life, and Partial Least Square. The concluding portion of the presentation focused on Chemical Identification. The Alpha MOS AroChemBase (a chemical & sensor database) has 140,000 compounds, 3,700 characterized by 550 sensory attributes, and 1,800 human smell detection thresholds. It is based on 10,000 publications and includes the NIST database, an official partner.

b. General Discussion:

During the Q&A session following the main presentation, questions arose regarding the use of the database. For Hercules calibration, an off-the-shelf mixture of compounds that is commercially available is used. Hercules uses aqueous samples. Cylinders or permeation-tube reference samples can also be used. The Hercules results can be linked to companion sensory panel analyses.

After the Q&A session, the Chair continued our discussion of uncertainty of odor measurements. To date, everyone agrees that we need a reference cylinder or other method to calibrate our Equipment Under Test (EUT). When relating the EUT to human panel results, these points were discussed:

- 1) The OU definition for the instrument must be different from that of human panel (EN13725).
- 2) The scale of the true odor concentration should be displayed in a log scale (instead of linear).
- 3) The curve relating the two should be approximately linear.
- 4) With a known uncertainty, we will assume the human panel results as the “true” concentration. Can we quantify this uncertainty?

The Chair continued the discussion by describing Expanded Uncertainty and the definition of a Data Quality Objective parameter. Members from the WG41/EN 13725 Revision alerted us to some related challenges. Simple linear regression relies on high trust in the reference odor, number of data points, knowledge of the distributions, and data independence (dilutions are highly correlated). Alternatives have been proposed including Chebyshev’s inequality and Bland Altman. Anne-Claude Roman agreed to bring information about these and other alternatives to our next meeting.

6. Unfinished Business/Action Item Review

There was no unfinished business.

7. New Business

There was no new business.

8. Future Meetings

The next meeting of the WG was scheduled to occur at 10 AM ET on December 12, 2022.

9. Adjourn

The WG Chair adjourned the meeting at 11:07 AM ET.

Attachment A: Meeting Participants (20)

Last Name	First Name	Affiliation
Chen	Allen C	Self
Danesh	Ehsan	Adsentec Ltd
Deshmukh	Sharvari	Visvesvaraya National Institute of Technology
Isz	Sandrine	Alpha MOS
Loubet	Francois	Ellona
Lozano	Jesus	Universidad de Extremadura
Manikandan	M Sabarimalai	Indian Institute of Technology Bhubaneswar
Mendoza	Javier	?
Mønster	Jacob	FORCE Technology
Mulla	Mohammad Yusuf	Research Institutes of Sweden (RISE)
Nagle	Troy	ECE, NC State University
Palma	Susana	NOVA university of Lisbon
Petrache	Ana	BEIA Consult
Potyrailo	Radislav	GE Research
Romain	Anne-Claude	University of Liege
Roman-Gonzalez	Avid	Business on Engineering and Technology S.A.C. (BE Tech)
Saffell	John	NosmoTech Ltd.
Schiffman	Susan	North Carolina State University
Srinkath	Kavirayani	Gayatri Vidya Parishad College of Eng (Autonomous), Visakhapatnam
Suciu Sr	George	BEIA
Suciu Jr.	George	Beia RO